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**National Highway
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Division of Arvin/Calspan
[REDACTED]

CALSPAN ON-SITE AIR BAG DEPLOYMENT INVESTIGATION

CALSPAN CASE NO. 93-15

VEHICLE - 1992 FORD TAURUS

LOCATION - [REDACTED]

ACCIDENT DATE - [REDACTED], 1993

Contract No. DTNH22-93-Q-07222

Prepared for:

U.S. Department of Transportation
National Highway Traffic Safety Administration
Washington, D.C. 20590

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The crash investigation process is an inexact science which requires that physical evidence such as skid marks, vehicular damage measurements, and occupant contact points are coupled with the investigator's expert knowledge and experience of vehicle dynamics and occupant kinematics in order to determine the pre-crash, crash, and post-crash movements of involved vehicles and occupants.

Because each crash is a unique sequence of events, generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicle(s) or their safety systems.

TECHNICAL REPORT STANDARD TITLE PAGE

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16. Abstract This on-site investigation focused on a moderate severity front-to-side impact configuration that involved a 1992 Ford Taurus station wagon that was equipped with a dual driver and passenger air bag Supplemental Restraint System (SRS). A 7 month old child passenger was seated in a forward facing [REDACTED] child safety seat in the right front position of the Ford Taurus. The child seat was reclined and the infant passenger was asleep with his head turned slightly to the left. As the Taurus' SRS deployed, the passenger side air bag contacted the child's face which resulted in a wide abrasion of the right face that extended from the mid forehead, across the right eye, and onto the right cheek. In addition, the child sustained ecchymosis around the right eye, and subconjunctiva hemorrhage of the eye. The child was transported by a police vehicle to a local hospital where he was treated for his injuries and released. The driver of the Taurus and an additional rear seat child passenger were not injured.					
17. Key Words Sufficient longitudinal deceleration Deployment of the dual driver and passenger side air bags Forward facing child safety seat Facial abrasions				18. Distribution Statement General Public	
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CALSPAN ON-SITE AIR BAG DEPLOYMENT INVESTIGATION
CALSPAN CASE NO. 93-15
VEHICLE - 1992 FORD TAURUS STATION WAGON
LOCATION [REDACTED]

Summary

This on-site investigation focused on a 1992 Ford Taurus station wagon that was involved in a moderate severity front-to-side impact configuration in [REDACTED], on [REDACTED] 1993. The crash occurred at a 4-leg intersection at a shopping center junction during daylight hours. The Ford Taurus was equipped with a Supplemental Restraint System (SRS) that consisted of dual driver and passenger side air bags. The SRS deployed at impact and produced minor severity (AIS-1) facial injuries to a seven month old child right front passenger.

The 1992 Ford Taurus was manufactured in [REDACTED] 1992 and was identified by the following vehicle identification number (VIN): 1FALP57UXNA (production number deleted). At the time of the vehicle inspection, the odometer reading was 24,078 km (14,955 miles). In addition to the SRS, the Taurus station wagon was equipped with a 4-speed automatic overdrive transmission, 4-wheel power disc brakes with anti-lock (ABS), tilt steering wheel, power windows, power door locks, power driver's seat, power outside rear view mirrors, leather seats with front buckets and center console, 4-way adjustable front seat head restraints, and cruise control.

The Ford Taurus was driven by a 37 year old female with a stated height of 168 cm (66") and weight of 62 kg (138 lbs). She was wearing the manual 3-point lap and shoulder belt system. Her 7 month old son was seated in a forward facing [REDACTED] child safety seat that was positioned in the right front occupant space. The infant was approximately 72 cm (28.5") in length and 8 kg (18 lbs) in weight. The child was restrained in the safety seat by the integral 5-point harness and the seat was secured by the vehicle's 3-point lap and shoulder belt system. A warning label was affixed to the right front belt webbing that indicated a locking clip must be used with a child seat to avoid injury from the seat tipping over. The Ford recommended locking clip was properly used on the manual belt system. The belt system was properly positioned through the frame of the seat as instructed by the manufacturer. The driver's 3 old son was seated in a [REDACTED] booster seat in the center rear position of the Taurus. The booster seat was equipped with a shield and was securely fastened by the vehicle's 2-point lap belt.

The Ford Taurus was traveling southbound in the curb lane of a four-lane roadway and was following a commercial transit bus. The driver of the bus apparently stopped as he attempted to merge into the left travel lane in preparation for a left turn at the intersection. As the bus cleared the curb lane, the driver of the Taurus accelerated from a stopped position and began to overtake the bus. She estimated her travel speed at 16-24 KPH (10-15 mph).

Vehicle #2, a 1988 BMW, 4 door sedan, was traveling in a northerly direction opposite of the Ford Taurus. The driver of vehicle #2 apparently observed the left turning bus and initiated a left turn into a shopping center, across the Taurus' path of travel. The driver of the Taurus stated that the bus obstructed her view of vehicle #2 and that she did not detect the vehicle until it cleared the bus immediately prior to impact.

The full frontal area of the Ford Taurus impacted the right side area of the left turning vehicle #2. The Taurus sustained moderate frontal damage that was distributed across the full width of the vehicle. Based on impact configuration, resultant directions of force were probably within the 12 o'clock sector the Ford Taurus and within the # o'clock sector for the struck vehicle #2. As a result of the crash, the Taurus underwent a sufficient longitudinal deceleration which deployed the dual air bag SRS. The velocity change was estimated at 18-21 KPH (11-13 mph).

At the time of our inspection, the exterior damage to the Ford Taurus had been repaired. The body shop reported that they had replaced the front bumper, both bumper energy absorbing units (EADs), the header panel, hood, and the air conditioning condenser. In addition, the body shop repaired the right front fender and straightened the radiator support panel and both front frame rails. They also replaced the front mounted crash sensors for the SRS. The total repair cost was \$5,783.

At impact, the Taurus' dual air bag SRS deployed. The belted driver was in a normal seated position at impact with both hands bracing against the steering wheel. Her seat was adjusted to a mid track position and the seatback was found slightly reclined, two positions rearward of the full forward adjustment point. The power driver's seat track had 23 cm (9.0" of fore and aft adjustment. At the time of our inspection, the seat track was adjusted 14 cm (5.5") rearward of the full forward position. The tilt steering column had five adjustment points and was found adjusted to the second position from the full down adjustment point.

The driver probably initiated a forward trajectory in response to the frontal impact sequence and loaded the manual belt system. Based on her seated position, she probably contacted the deployed air bag with her upper thoracic and facial areas. The manual and automatic restraint systems provided the driver with sufficient restraint and protected her from potential contact and injury from the steering assembly. There was no loading evidence on the manual belt system or contact evidence on the deployed air bag.

The driver's side air bag system deployed in a typical sequence from the steering wheel mounted module assembly. The module was contained within an offset (vertical orientation) four-spoke steering wheel rim with the cruise control buttons located on each side of the module. The module cover flap opened at the designated tear points in an H-configuration. The large upper flap measured 20.3 cm (8") horizontally x 12.4 cm (4.8") vertically while the smaller lower flap had respective measurements of 20.3 cm (8") x 3.5 cm (1.375"). Both cover flaps were approximately 8mm (5/16") in thickness. The upper module cover flap had an identification number [REDACTED] molded into the inside surface. There was no damage to the flaps.

The deployed air bag was constructed of a woven nylon fabric with a neoprene liner. The bag, in its deflated state, was approximately 66 cm (26") in diameter. The bag was sewn with an internal peripheral seam with one row of orange and green stitching exposed to the external surface of the bag. There were two 2.5 cm (1") diameter vent ports located on the back side of the bag at the 11 and 1 o'clock positions. The driver's side air bag was tethered by four internal tether straps that extended from an octagonal reinforcement that was sewn to the center of the bag. The tether reinforcement was 18 cm (7") in diameter and contained three rows of orange and green stitching. There were no identification numbers on the air bag; however, the face of the gas generator backer plate was stamped with the following sequence at the upper left quadrant: [REDACTED] The upper right quadrant of the backer plate was stamped with number [REDACTED]. There was no generant residue in the area of the vent ports or on the internal surface of the bag. Faint residue deposits were visible on the filtering screen for the radial ports of the inflator at the 7-9 o'clock position.

The right front passenger of the Ford Taurus was a seven month old male who was seated in a reclined, forward facing the child safety seat. The safety seat was manufactured by RENOLUX of [REDACTED] and was identified by the following molded into the right frame area of the seat:

[REDACTED]

The safety seat was properly restrained within the vehicle by the manual 3-point lap and shoulder belt system. The child was secured to the seat by the integral 5-point harness system. His mother, the driver, stated that the child was asleep at the time of the crash and based on his injuries, the child's head was probably rotated slightly to the left of the vehicle. The right front bucket seat was adjusted to a rearward position with the seatback set to a slight reclined position. There was approximately 19 cm (7.5") of fore and aft seat track adjustment and the seat was found adjusted 3.8 cm (1.5") forward of the full rearward adjustment point.

The sunvisors contained warning labels for the SRS system. The labels were affixed to the top surface of the visors and advised the following:

Driver's Side Sunvisor Warning Label

This vehicle has a DRIVER AIR BAG Supplemental Restraint System (SRS). The SRS supplements the front seat belt by inflating in moderate or severe frontal collisions. It is not designed to inflate in side or rear crashes, rollovers, or minor frontal collisions, so ALWAYS WEAR YOUR SEAT BELT.

PASSENGER AIR BAG WARNING

If the letters "SRS" are above the glove box, this vehicle has a right front passenger air bag. To reduce risk of injury from an inflating air bag in an accident:

- Always use seat belts or child seat. For child seats in vehicles with a passenger air bag:
- Forward facing - move passenger seat as far from dash as possible.
- Rear facing - use only in rear seat.

Air bag lamp normally lights briefly when ignition key is turned on. **NO MAINTENANCE IS NEEDED**

unless:

- Air bag lamp flashes or stays lit.
- Air bag lamp does not light when key is turned on.
- Groups of 5 beeps are heard.

SEE OWNER GUIDE FOR MORE AIR BAG INFORMATION

Passenger Side Sunvisor Warning Label

To reduce risk of injury from inflating air bag in an accident, front occupants must:

- Always use seat belts

CHILD SEATS

- Forward facing - move passenger seat as far from dash as possible
- Rear facing - use only in rear seat

SEE OWNER GUIDE

The passenger side air bag deployed from the module that was mounted into the upper right instrument panel of the Ford Taurus. The module cover flaps were positioned in a vertical orientation and opened in an H-configuration. The upper flap was rigid and remained in a vertically orientated (closed) position. The flap was 31.1 cm (12 5/16") wide and varied in height, 7.5 cm (2 15/16") at the left edge, 7 cm (2.75") at the center, and 6 cm (2 3/8") at the right edge. The lower module cover flap was hinged at the bottom and opened fully to 90 degrees. The flap was similar in width to the upper and was 6.5 cm (2.5") in height at the edges and 6.7 cm (2 5/8") at the center point. Both module cover flaps were approximately 3 mm (1/8") in thickness.

The air bag fully extended from the module assembly and was constructed of three major sections of a woven nylon fabric. There were no internal tethers or neoprene type liner within the passenger bag. A large continuous section of the bag formed the top, face, and bottom surfaces while individual sections formed both side panels. All seams were internal and were sewn with stitching similar to that of the driver bag. Two large 6.4 cm (2.5") diameter vent ports were located on the left inboard side surface of the bag. The vertically orientated ports were located 47 cm (18.5") outboard of the upper instrument panel.

Adjacent to both sides of the passenger side module cover flaps, were plastic trim panels that were fastened to the upper instrument panel by three spring clips. The left side trim panel was 27.8 cm (10 15/16") in length and 14.6 cm (5.75") in height adjacent to the air bag module cover flaps and 3.8 cm (1.5") in height at the edge of the panel. The right side panel was approximately 20.3 cm (8") in length and 12.7 cm (5") in height adjacent to the right side of the module assembly. This trim panel was identified by the following Ford part number:

[REDACTED]

Both trim panels appeared to have been dislodged by the module cover flaps as the passenger side air bag deployed. The three spring clips for the left side trim panel had disengaged from their mounting holes and the panel was found resting on the upper/mid instrument panel juncture. The right side trim panel had completely separated from the instrument panel and was found by the driver and her husband on the right front floor, adjacent to the outboard corner of the bucket seat cushion. In addition to the separation of the trim panels, a small rigid plastic TAURUS name plate disengaged from the right mid instrument panel located between the glove box door and the passenger air bag module assembly. The 9 cm (3 1/2") x 2 cm (13/16") name plate came to rest on the right front floor area of the vehicle.

The seven month old child occupant was asleep (eyes closed) as the SRS deployed. The upper third of the right front seatback was positioned 91 cm (36") rearward of the passenger air bag module. The child safety seat subsequently positioned the infant approximately 10 cm (4") closer to the module. Maximum rearward excursion of the passenger bag in its deflated state was 81.3 cm (32"), therefore the child was within range of the deploying bag. The passenger side air bag contacted the child's face which resulted in a wide abrasion (AIS-1) that began at the left forehead above the mid eyebrow area and extended to the right, which ended at the right edge of the right eyebrow. The abrasion extended vertically from the mid forehead, across the right upper and lower eyelids and onto the right cheek. There was a vertically orientated abrasion on the right cheek that extended from the right corner of the eye to the lower cheek, which ended at the level of the upper lip. A diagonally orientated abrasion was located under the right eye which began at the inside corner of the eye and extended toward the vertically orientated abrasion. In addition to the facial abrasions, the infant sustained ecchymosis (AIS-1) around the right eye and subconjunctiva hemorrhage (AIS-1) of the right eye. The contour of the vertically orientated abrasion on the child's right cheek resembled the contour of the inboard edge of the separated right trim panel. It was remotely possible that the trim panel contacted the child's face in swiping sequence which produced the superficial abrasion. A direct impact to the child's face probably would have resulted in more severe or internal injury (i.e. laceration, fractures) to the face.

The driver's 3 year old son was restrained in a [REDACTED] booster seat in the center rear position of the Ford Taurus. The child, who was 99 cm (39") in height and 17 kg (38 lbs), was not displaced or injured in the crash.

The driver of the Taurus removed her children from the vehicle immediately following the crash. A local police officer transported them to a local hospital due to the injury of the seven month old child passenger. The child passenger was examined and x-rayed in the

emergency room. He was also examined by an ophthalmologist who diagnosed the subconjunctiva hemorrhage to the right eye. Following the treatment at the hospital, the child was released and was transported by his parents to his pediatrician where he was further examined for possible injury.

Both vehicles were driven from the scene of the crash. The Ford taurus was subsequently transported to a local [REDACTED] for repair to the exterior damage and replacement of the deployed SRS.



Frontal Damage To The Ford Taurus



Right Side View Of The Taurus



Damaged Bumper Facia



Direct Contact Damage To Right Side Of Bumper Facia



Direct Contact Damage To Left Side Of Bumper Facia



Frontal View Of The Repaired Ford Taurus



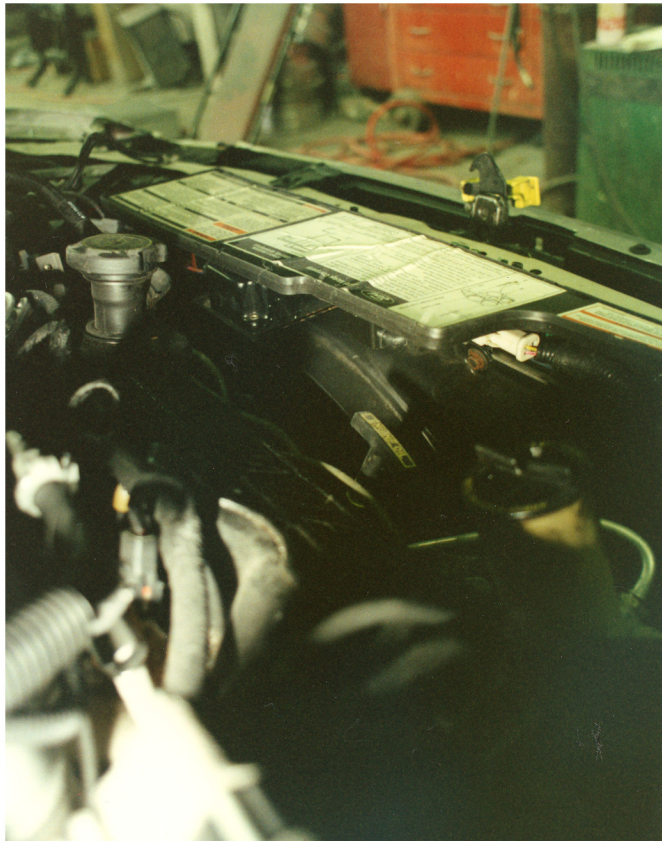
Left Front Three-Quarter View



Right Front Three-Quarter View



Engine Compartment Of The Repaired Ford Taurus



Center Front Air Bag Crash Sensor



Overall View Of The Deployed Air Bags



Perpendicular View Of The Driver's Seated Position



Driver's Side Air Bag Vent Ports And Upper Module Cover Flap



Perpendicular View Of The Driver's Side Module Cover Flaps



Overall View Of The Deployed Air Bags From The Right Door Area



Perpendicular View Of The Right Front Passenger Seat And Deployed Air Bag



Perpendicular View Of The Child Safety Seat And The Deployed Passenger Air Bag



Perpendicular View Of The Passenger Side Air Bag Module Cover Flap



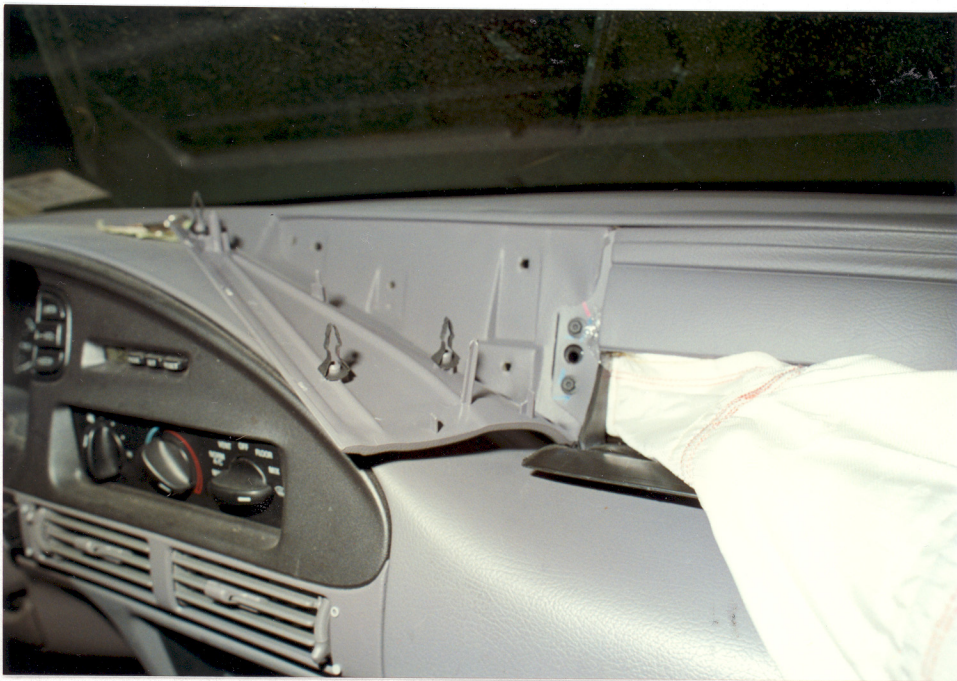
Upper Module Cover Flap



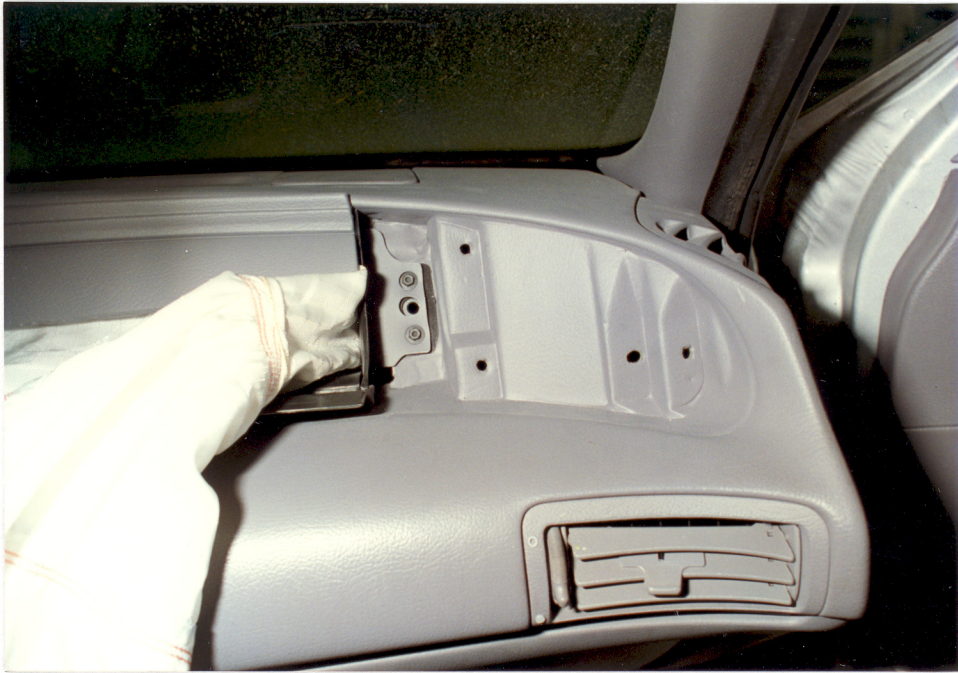
Lower Module Cover Flap



Disengaged Trim Panel Adjacent To The Left Side Of The Passenger Air Bag Module



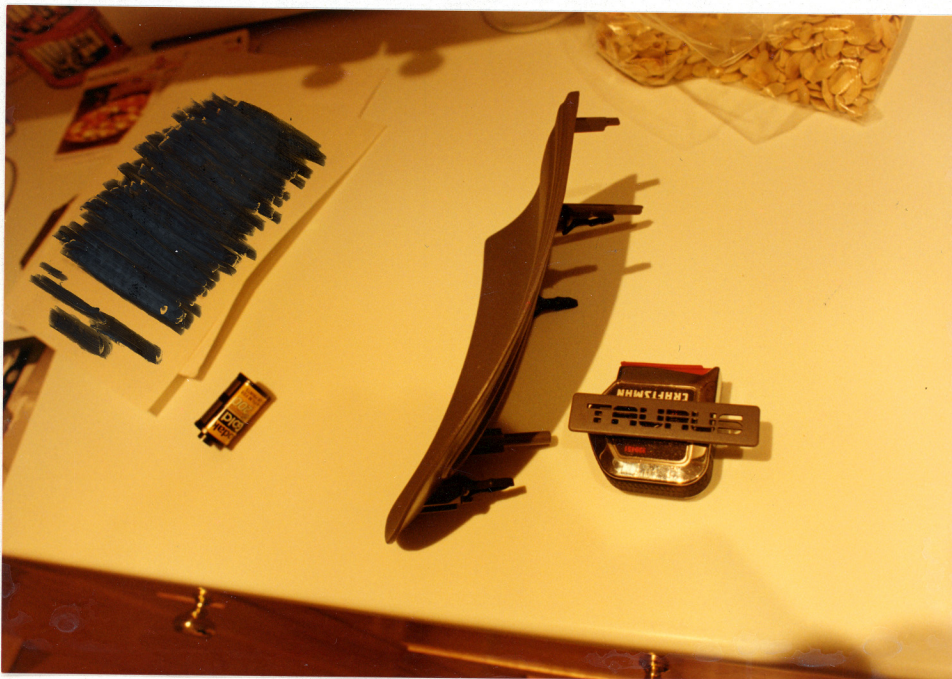
Spring Clips And Mounting Holes



Disengaged Right Side Trim Panel



Front View Of The Right Side Trim Panel



Profile View Of The Right Side Trim Panel



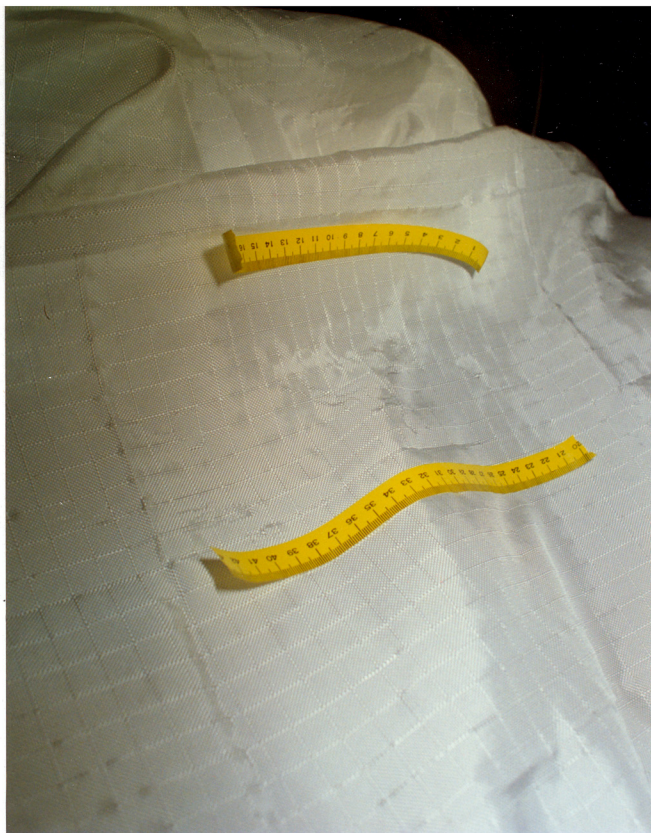
Disengaged TAURUS Name Plate From Mid Panel



Deployed Passenger Side Air Bag



Fabric Snags In Passenger Side Air Bag



Closeup View Of The Fabric Snags



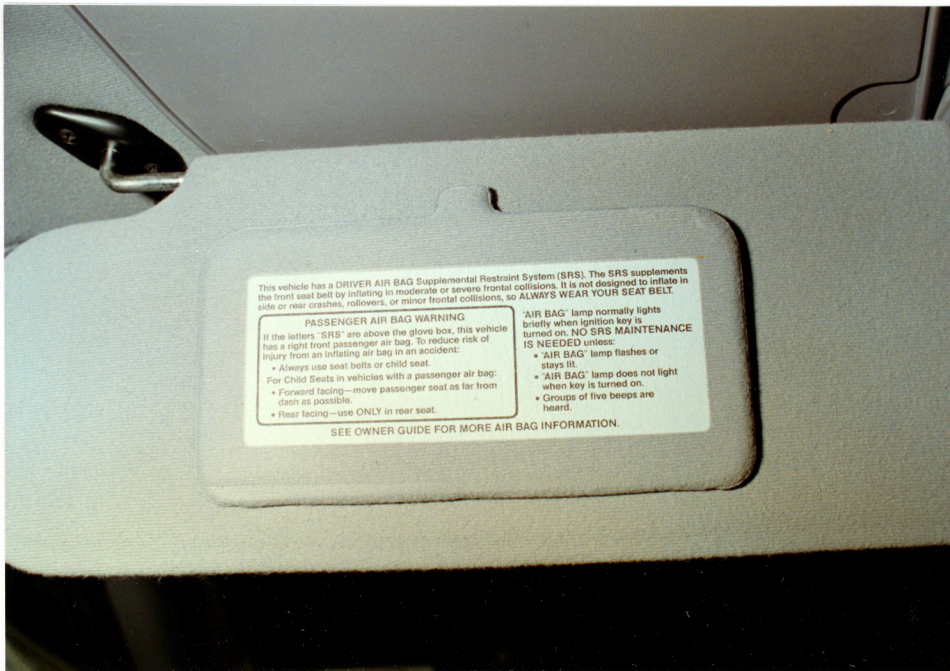
Vent Ports On Left Side Of Passenger Bag



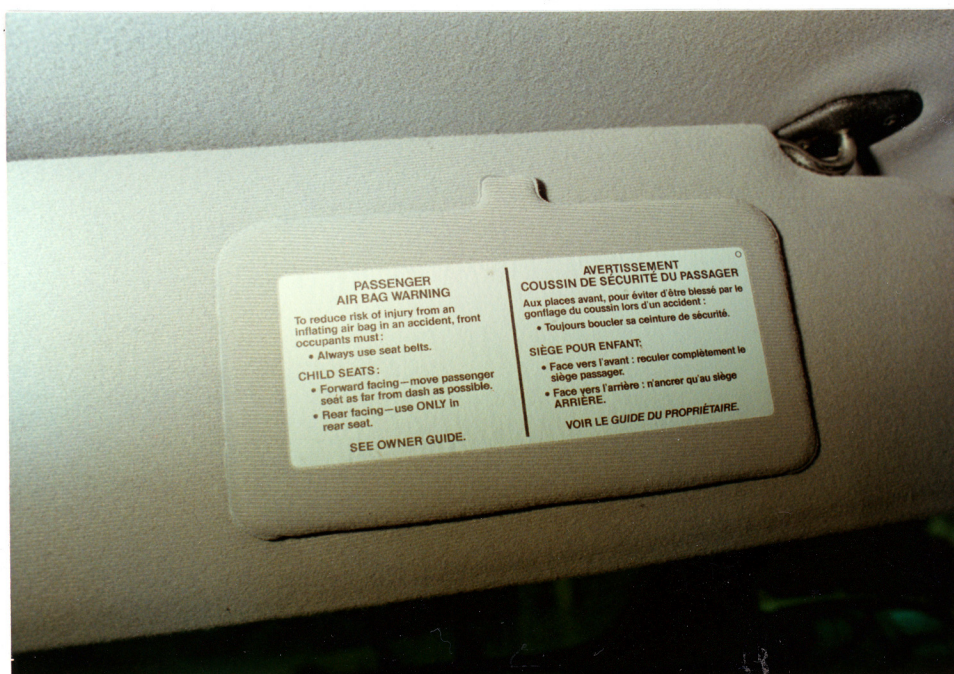
Right Front Seat And Manual Belt System



Locking Clip Warning Label On Right Front Belt Webbing



Warning Label On Driver's Side Sunvisor



Warning Label On Passenger's Side Sunvisor



View Of The RENOLUX Child Safety Seat Mounted In Another Vehicle

“GRAPHIC” PHOTOGRAPHS AND IMAGES

The following “GRAPHIC” Photographs and Images have been removed from this case.

page 29 bottom photo

If you would like a copy of these photographs and/or images please write to:

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In the body of your request please include the case, photograph and image number(s).

Attachment A

Police Accident Report

BEST AVAILABLE COPY

USE
COVER
SHEET
G

Attachment B

NASS Occupant Forms
(Child Occupant)



OCCUPANT ASSESSMENT FORM

OCCUPANT'S SEATING

1. Primary Sampling Unit Number

2. Case Number - Stratum

3. Vehicle Number

4. Occupant Number

OCCUPANT'S CHARACTERISTICS

5. Occupant's Age

Code actual age at time of accident.

(00) Less than one year old (specify by month):

7 MONTHS

(97) 97 years and older

(99) Unknown

6. Occupant's Sex

(1) Male

(2) Female

(9) Unknown

7. Occupant's Height

Code actual height to the nearest centimeter.

(999) Unknown

28.5 inches X 2.54 = _____ centimeters

8. Occupant's Weight

Code actual weight to the nearest kilogram.

(999) Unknown

18.5 pounds X .4536 = _____ kilograms

9. Occupant's Role

(1) Driver

(2) Passenger

(9) Unknown

10. Occupant's Seat Position

Front Seat

(11) Left side

(12) Middle

(13) Right side

(14) Other (specify): _____

(15) On or in the lap of another occupant

Second Seat

(21) Left side

(22) Middle

(23) Right side

(24) Other (specify): _____

(25) On or in the lap of another occupant

Third Seat

(31) Left side

(32) Middle

(33) Right side

(34) Other (specify): _____

(35) On or in the lap of another occupant

Fourth Seat

(41) Left side

(42) Middle

(43) Right side

(44) Other (specify): _____

(45) On or in the lap of another occupant

(97) In or on unenclosed area

(98) Other seat (specify): _____

(99) Unknown

11. Occupant's Posture

(0) Normal posture

Abnormal posture

(1) Kneeling or standing on seat

(2) Lying on or across seat

(3) Kneeling, standing or sitting in front of seat

(4) Sitting sideways or turned to talk with another occupant or to look out a rear window

(5) Sitting on a console

(6) Lying back in a reclined seat position

(7) Bracing with feet or hands on a surface in front of seat

(8) Other abnormal posture (specify): _____

(9) Unknown

EJECTION/ENTRAPMENT

12. Ejection 0

- (0) No ejection
- (1) Complete ejection
- (2) Partial ejection
- (3) Ejection, unknown degree
- (9) Unknown

15. Medium Status (Immediately Prior To Impact) 0

- (0) No ejection
- (1) Open
- (2) Closed
- (3) Integral structure
- (9) Unknown

13. Ejection Area 0

- (0) No ejection
- (1) Windshield
- (2) Left front
- (3) Right front
- (4) Left rear
- (5) Right rear
- (6) Rear
- (7) Roof
- (8) Other area (e.g., back of pickup, etc.)
(specify): _____
- (9) Unknown

16. Entrapment 0

(NOTE: Entrapped means that part of the person was in the vehicle and mechanically restrained; jammed doors and immobilizing injuries by themselves are not sufficient to constitute entrapment.)

- (0) Not entrapped
- (1) Entrapped
- (9) Unknown

14. Ejection Medium 0

- (0) No ejection
- (1) Door/hatch/tailgate
- (2) Nonfixed roof structure
- (3) Fixed glazing
- (4) Nonfixed glazing (specify): _____

- (5) Integral structure
- (8) Other medium (specify): _____
- (9) Unknown

RESTRAINT SYSTEM EVALUATION

17. Manual (Active) Belt System Availability 4

- (0) None available
- (1) Belt removed/destroyed
- (2) Shoulder belt
- (3) Lap belt
- (4) Lap and shoulder belt
- (5) Belt available—type unknown

Integral Belt Partially Destroyed

- (6) Shoulder belt (lap belt destroyed/removed)
- (7) Lap belt (shoulder belt destroyed/removed)

(8) Other belt (specify): _____

(9) Unknown _____

18. Manual (Active) Belt System Use 14

- (00) None used, not available, or belt removed/destroyed
- (01) Inoperative (specify): _____

(02) Shoulder belt _____

(03) Lap belt _____

(04) Lap and shoulder belt _____

(05) Belt used—type unknown _____

(08) Other belt used (specify): _____

(12) Shoulder belt used with child safety seat _____

(13) Lap belt used with child safety seat _____

(14) Lap and shoulder belt used with child safety seat _____

(15) Belt used with child safety seat—type unknown _____

(18) Other belt used with child safety seat (specify): _____

(99) Unknown if belt used _____

19. Proper Use of Manual (Active) Belts 2

- (0) None used or not available
- (1) Belt used properly
- (2) Belt used properly with child safety seat

Belt Used Improperly

- (3) Shoulder belt worn under arm
- (4) Shoulder belt worn behind back or seat
- (5) Belt worn around more than one person
- (6) Lap belt worn on abdomen
- (7) Lap belt or lap and shoulder belt used improperly with child safety seat (specify): _____

(8) Other improper use of manual belt system (specify): _____

(9) Unknown _____

20. Manual (Active) Belt Failure Modes During Accident 1

- (0) No manual belt used
- (1) No manual belt failure(s)
- (2) Torn webbing (stretched webbing not included)
- (3) Broken buckle or latchplate
- (4) Upper anchorage separated
- (5) Other anchorage separated (specify): _____

(6) Broken retractor _____

(7) Combination of above (specify): _____

(8) Other manual belt failure (specify): _____

(9) Unknown _____

21. Air Bag System Availability/Function 1

- (0) Not equipped/not available
- (1) Air bag

Non-functional

(2) Air bag disconnected (specify): _____

(3) Air bag not reinstalled _____

(9) Unknown _____

22. Air Bag System Deployment 1

- (0) Not equipped/not available
- (1) Air bag deployed during accident (as a result of impact)
- (2) Air bag deployed inadvertently just prior to accident
- (3) Air bag deployed, accident sequence undetermined
- (4) Nondeployed
- (5) Unknown if deployed
- (6) Air bag deployed as a result of a noncollision event during accident sequence (e.g., fire, explosion, electrical)
- (9) Unknown

23. Are There Indications of Air Bag System Failure? 1

- (0) Not equipped/not available
- (1) No
- (2) Yes (specify): _____

(9) Unknown _____

Note: See Variables 44 through 48 (Page 5) for Information on Automatic Belts

24. Police Reported Restraint Use 6

- (0) None used
- (1) Police did not indicate restraint use
- (2) Shoulder belt
- (3) Lap belt
- (4) Lap and shoulder belt
- (5) Belt used, type not specified
- (6) Child safety seat
- (7) Other or automatic restraint (specify): _____

(8) Restrained, type unknown _____

(9) Police indicated "unknown" _____

HEAD RESTRAINT AND SEAT EVALUATION

25. Head Restraint Type/Damage by Occupant
at This Occupant Position3

- (0) No head restraints
- (1) Integral—no damage
- (2) Integral—damaged during accident
- (3) Adjustable—no damage
- (4) Adjustable—damaged during accident
- (5) Add-on—no damage
- (6) Add-on—damaged during accident
- (8) Other (specify): _____
- (9) Unknown

26. Seat Type (this Occupant Position)

01

- (00) Occupant not seated or no seat
- (01) Bucket
- (02) Bucket with folding back
- (03) Bench
- (04) Bench with separate back cushions
- (05) Bench with folding back(s)
- (06) Split bench with separate back cushions
- (07) Split bench with folding back(s)
- (08) Pedestal (i.e., column supported)
- (09) Other seat type (specify): _____
- (10) Box mounted seat (i.e., van type)
- (99) Unknown

27. Seat Performance (this Occupant Position)

1

- (0) Occupant not seated or no seat
- (1) No seat performance failure(s)
- (2) Seat adjusters failed
- (3) Seat back folding locks or "seat back" failed
- (4) Seat track/anchors failed
- (5) Deformed by impact of occupant
- (6) Deformed by passenger compartment intrusion (specify): _____
- (7) Combination of above (specify): _____
- (8) Other (specify): _____
- (9) Unknown

CHILD SAFETY SEAT

28. Child Safety Seat Make/Model 256
(000) No child safety seat
Applicable codes are found in your NASS CDS
Data Collection, Coding and Editing
(950) Built-in child safety seat
(997) Other make/model (specify):

(998) Unknown make/model
(999) Unknown if child safety seat used

29. Type of Child Safety Seat 2
(0) No child safety seat
(1) Infant seat
(2) Toddler seat
(3) Convertible seat
(4) Booster seat
(7) Other type child safety seat (specify):

(8) Unknown child safety seat type
(9) Unknown if child safety seat used

30. Child Safety Seat Orientation 02
(00) No child safety seat

Designed for Rear Facing for This Age/Weight

(01) Rear facing
(02) Forward facing
(08) Other orientation (specify):

(09) Unknown orientation

Designed For Forward Facing for This Age/Weight

(11) Rear facing
(12) Forward facing
(18) Other orientation (specify):

(19) Unknown orientation

Unknown Design or Orientation For This Age/Weight, or Unknown Age/Weight

(21) Rear facing
(22) Forward facing
(28) Other orientation (specify):

(29) Unknown orientation

(99) Unknown if child safety seat used

31. Child Safety Seat Harness Usage 12

32. Child Safety Seat Shield Usage 03

33. Child Safety Seat Tether Usage 03

Note: Options below applicable to
Variables OA31-OA33.

(00) No child safety seat

Not Designed With Harness/Shield/Tether

(01) After market harness/shield/tether
added, not used
(02) After market harness/shield/tether used
(03) Child safety seat used, but no after market
harness/shield/tether added
(09) Unknown if harness/shield/tether
added or used

Designed With Harness/Shield/Tether

(11) Harness/shield/tether not used
(12) Harness/shield/tether used
(19) Unknown if harness/shield/tether used

Unknown If Designed With Harness/Shield/Tether

(21) Harness/shield/tether not used
(22) Harness/shield/tether used
(29) Unknown if harness/shield/tether used

(99) Unknown if child safety seat used

INJURY CONSEQUENCES34. Injury Severity (Police Rating) 2

- (0) O - No injury
- (1) C - Possible injury
- (2) B - Nonincapacitating injury
- (3) A - Incapacitating injury
- (4) K - Killed
- (5) U - Injury, severity unknown
- (6) Died prior to accident
- (9) Unknown

35. Treatment - Mortality 4

- (0) No treatment
- (1) Fatal
- (2) Fatal - ruled disease (specify):

Nonfatal

- (3) Hospitalization
- (4) Transported and released
- (5) Treatment at scene - nontransported
- (6) Treatment later
- (8) Treatment - other (specify):

(9) Unknown

36. Type Of Medical Facility (for Initial Treatment) 2

- (0) Not treated at a medical facility
- (1) Trauma center
- (2) Hospital
- (3) Medical clinic
- (4) Physician's office
- (5) Treatment later at medical facility
- (8) Other (specify):

(9) Unknown

37. Hospital Stay 00

- (00) Not Hospitalized

Code the number of days (up through 60) that the occupant stayed in hospital.

- (61) 61 days or more
- (99) Unknown

38. Working Days Lost 00

- Code the number of days (up through 60) that the occupant lost from work due to the accident
- (00) No working days lost
 - (61) 61 days or more
 - (62) Fatally injured
 - (97) Not working prior to accident
 - (99) Unknown

STOP - GO TO VARIABLE 44 ON PAGE 7**VARIABLES 39 THROUGH 43 ARE COMPLETED BY THE ZONE CENTER**39. Time to Death 00

- Code number of hours from time of accident to time of death up through 24 hours. If time of death is greater than 24 hours, code number of days. (Note: 1 day = 31, 2 days = 32, ... n days = 30 + n up through 30 days = 60)
- (00) Not fatal
 - (96) Fatal - ruled disease
 - (99) Unknown

40. 1st Medically Reported Cause of Death 0041. 2nd Medically Reported Cause of Death 0042. 3rd Medically Reported Cause of Death 00

- Code the Occupant Injury from line number(s) for the medically reported injury(s) which reportedly contributed to this occupant's death
- (00) Not fatal or no additional causes
 - (97) Other result (includes fatal ruled disease) (specify):

(99) Unknown

43. Number of Recorded Injuries for This Occupant 05

- Code the actual number of injuries recorded for this occupant.
- (00) No recorded injuries
 - (97) Injured, details unknown
 - (99) Unknown if injured

AUTOMATIC BELT SYSTEM**44. Automatic (Passive) Belt System Availability/ Function** 0

- (0) Not equipped/not available
 (1) 2 point automatic belts
 (2) 3 point automatic belts
 (3) Automatic belts - type unknown

Non-functional

- (4) Automatic belts destroyed or rendered inoperative
 (9) Unknown

45. Automatic (Passive) Belt System Use 0

- (0) Not equipped/not available/destroyed or rendered inoperative
 (1) Automatic belt in use
 (2) Automatic belt not in use (manually disconnected, motorized track inoperative) (specify):
 (3) Automatic belt use unknown
 (9) Unknown

46. Automatic (Passive) Belt System Type 0

- (0) Not equipped/not available
 (1) Non-motorized system
 (2) Motorized system
 (9) Unknown

47. Proper Use of Automatic (Passive) Belt System 0

- (0) Not equipped/not available/not used
 (1) Automatic belt used properly
 (2) Automatic belt used properly with child safety seat
- Automatic Belt Used Improperly**
- (3) Automatic shoulder belt worn under arm
 (4) Automatic shoulder belt worn behind back
 (5) Automatic belt worn around more than one person
 (6) Lap portion of automatic belt worn on abdomen
 (7) Automatic lap and shoulder belt or automatic shoulder belt used improperly with child safety seat (specify):
 (8) Other improper use of automatic belt system (specify):
 (9) Unknown

48. Automatic (Passive) Belt Failure Modes During Accident 0

- (0) Not equipped/not available/not in use
 (1) No automatic belt failure(s)
 (2) Torn webbing (stretched webbing not included)
 (3) Broken buckle or latchplate
 (4) Upper anchorage separated
 (5) Other anchorage separated (specify):
 (6) Broken retractor
 (7) Combination of above (specify):
 (8) Other automatic belt failure (specify):
 (9) Unknown

49. Seat Orientation (this Occupant Position) 1

- (0) Occupant not seated or no seat
 (1) Forward facing seat
 (2) Rear facing seat
 (3) Side facing seat (inward)
 (4) Side facing seat (outward)
 (8) Other (specify):
 (9) Unknown

STOP - VARIABLES 50 THROUGH 52 ARE COMPLETED BY THE ZONE CENTER

TRAUMA DATA**50. Glasgow Coma Scale (GCS) Score** 02
(at Medical Facility)

- (00) Not injured
 (01) Injured - not treated at medical facility
 (02) No GCS Score at medical facility
 (03-15) Code the actual value of the initial GCS Score recorded at medical facility.
 (97) Injured, details unknown
 (99) Unknown if injured

51. Was the Occupant Given Blood? 1

- (1) No - blood not given
 (2) Yes - blood given (specify units):
 (9) Unknown if blood given

52. Arterial Blood Gases (ABG) - HCO₃ 01

- (00) Not injured
 (01) Injured, ABGs not measured or reported
 (02-50) Code the actual value of the HCO₃
 (96) ABGs reported, HCO₃ unknown
 (97) Injured, details unknown
 (99) Unknown if injured

ARE ALL APPLICABLE MEDICAL RECORDS INCLUDED WITH INITIAL SUBMISSION?

NO [] YES [X]

UPDATE CANDIDATE?

NO [X] YES []



OCCUPANT INJURY FORM

1. Primary Sampling Unit Number	3. Vehicle Number
2. Case Number - Stratum	4. Occupant Number

INJURY DATA

Record below the actual injuries sustained by this occupant that were identified from the official and unofficial data sources. Remember not to double count an injury just because it was identified from two different sources. If greater than ten injuries have been documented, encode the balance on the Occupant Injury Supplement.

	Source of Injury Data	O.I.C.-A.I.S					Injury Source	Injury Source Confidence Level	Direct/ Indirect Injury	Occupant Area Intrusion Number	
		Body Region	Type of Anatomic Structure	Specific Anatomic Structure	Level of Injury	A.I.S. Severity					Aspect
1st	5. <u>3</u>	6. <u>2</u>	7. <u>4</u>	8. <u>04</u>	9. <u>16</u>	10. <u>1</u>	11. <u>1</u>	12. <u>45</u>	13. <u>1</u>	14. <u>1</u>	15. <u>00</u>
2nd	16. <u>3</u>	17. <u>2</u>	18. <u>9</u>	19. <u>74</u>	20. <u>02</u>	21. <u>1</u>	22. <u>1</u>	23. <u>45</u>	24. <u>1</u>	25. <u>1</u>	26. <u>00</u>
3rd	27. <u>3</u>	28. <u>2</u>	29. <u>9</u>	30. <u>72</u>	31. <u>02</u>	32. <u>1</u>	33. <u>1</u>	34. <u>45</u>	35. <u>1</u>	36. <u>1</u>	37. <u>00</u>
4th	38. <u>3</u>	39. <u>2</u>	40. <u>9</u>	41. <u>02</u>	42. <u>02</u>	43. <u>1</u>	44. <u>7</u>	45. <u>45</u>	46. <u>1</u>	47. <u>1</u>	48. <u>00</u>
5th	49. <u>3</u>	50. <u>2</u>	51. <u>9</u>	52. <u>02</u>	53. <u>02</u>	54. <u>1</u>	55. <u>1</u>	56. <u>45</u>	57. <u>1</u>	58. <u>1</u>	59. <u>00</u>
6th	60. <u> </u>	61. <u> </u>	62. <u> </u>	63. <u> </u>	64. <u> </u>	65. <u> </u>	66. <u> </u>	67. <u> </u>	68. <u> </u>	69. <u> </u>	70. <u> </u>
7th	71. <u> </u>	72. <u> </u>	73. <u> </u>	74. <u> </u>	75. <u> </u>	76. <u> </u>	77. <u> </u>	78. <u> </u>	79. <u> </u>	80. <u> </u>	81. <u> </u>
8th	82. <u> </u>	83. <u> </u>	84. <u> </u>	85. <u> </u>	86. <u> </u>	87. <u> </u>	88. <u> </u>	89. <u> </u>	90. <u> </u>	91. <u> </u>	92. <u> </u>
9th	93. <u> </u>	94. <u> </u>	95. <u> </u>	96. <u> </u>	97. <u> </u>	98. <u> </u>	99. <u> </u>	100. <u> </u>	101. <u> </u>	102. <u> </u>	103. <u> </u>
10th	104. <u> </u>	105. <u> </u>	106. <u> </u>	107. <u> </u>	108. <u> </u>	109. <u> </u>	110. <u> </u>	111. <u> </u>	112. <u> </u>	113. <u> </u>	114. <u> </u>

Abrasion over the mid and right aspects of the forehead (AIS-1), passenger side air bag

Subconjunctiva hemorrhage of the right eye (AIS-1), passenger side air bag

Abrasion with ecchymosis around the right eye and both eyelids (AIS-1), passenger side air bag

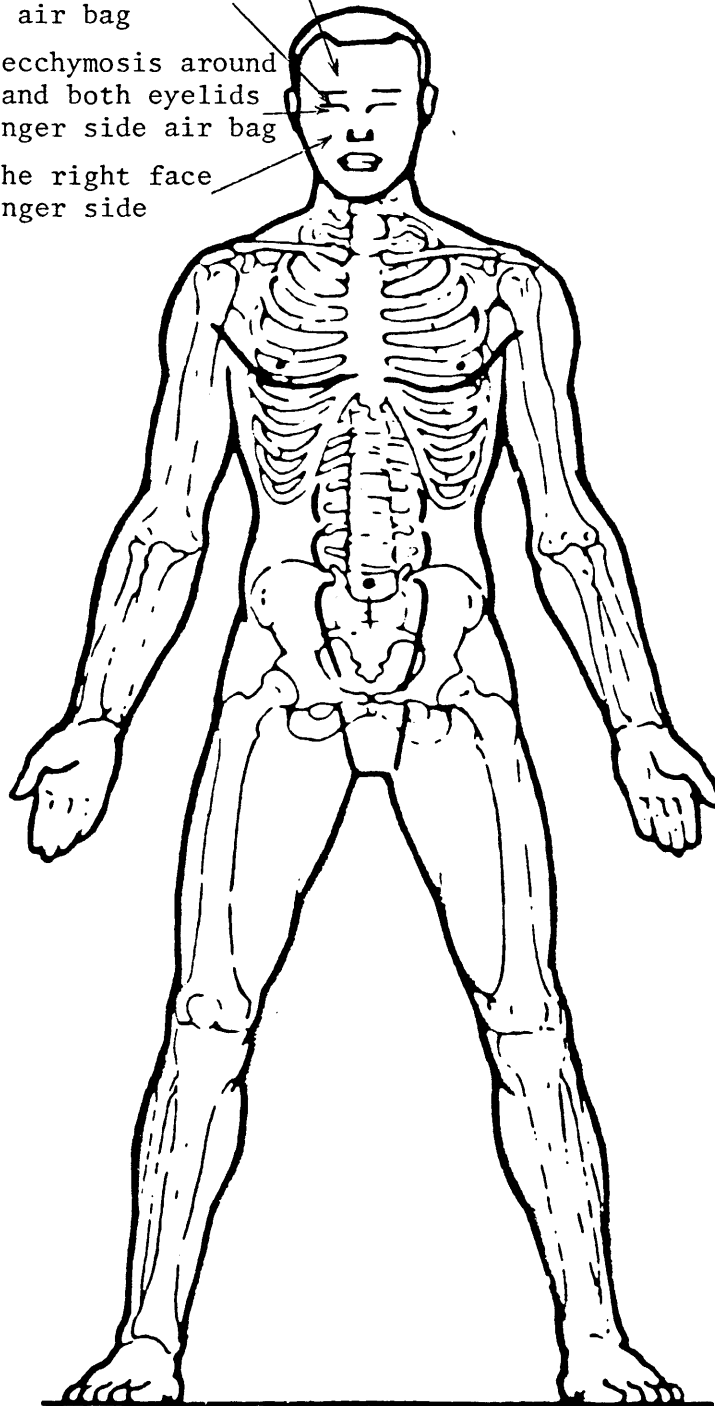
Abrasions of the right face (AIS-1), passenger side air bag

AGE 7 months

SEX male...

WT 8kg (18.5lbs)

HT 72cm (28.5")



SOURCE OF INJURY DATA

OFFICIAL

- (1) Autopsy records with or without hospital/medical records
- (2) Hospital/medical records other than emergency room (e.g., discharge summary)
- (3) Emergency room records only (including associated X-rays or other lab reports)
- (4) Private physician, walk-in or emergency clinic

UNOFFICIAL

- (5) Lay coroner report
- (6) E.M.S. personnel
- (7) Interviewee
- (8) Other source (specify): _____
- (9) Police

INJURY SOURCE

FRONT

- (01) Windshield
- (02) Mirror
- (03) Sunvisor
- (04) Steering wheel rim
- (05) Steering wheel hub/spoke
- (06) Steering wheel (combination of codes 04 and 05)
- (07) Steering column, transmission selector lever, other attachment
- (08) Add on equipment (e.g., CB, tape deck, air conditioner)
- (09) Left instrument panel and below
- (10) Center instrument panel and below
- (11) Right instrument panel and below
- (12) Glove compartment door
- (13) Knee bolster
- (14) Windshield including one or more of the following: front header, A (A1/A2)-pillar, instrument panel, mirror, or steering assembly (driver side only)
- (15) Windshield including one or more of the following: front header, A (A1/A2)-pillar, instrument panel, or mirror (passenger side only)
- (16) Driver side air bag compartment cover
- (17) Passenger side air bag compartment cover
- (18) Windshield reinforced by exterior object (specify): _____
- (19) Other front object (specify): _____

LEFT SIDE

- (20) Left side interior surface, excluding hardware or armrests
- (21) Left side hardware or armrest
- (22) Left A (A1/A2)-pillar
- (23) Left B-pillar
- (24) Other left pillar (specify): _____

- (25) Left side window glass or frame
- (26) Left side window glass including one or more of the following: frame, window sill, A (A1/A2)-pillar, B-pillar, or roof side rail.
- (27) Other left side object (specify): _____

- (28) Left side window sill

RIGHT SIDE

- (30) Right side interior surface, excluding hardware or armrests
- (31) Right side hardware or armrest
- (32) Right A (A1/A2)-pillar
- (33) Right B-pillar
- (34) Other right pillar (specify): _____

- (35) Right side window glass or frame
- (36) Right side window glass including one or more of the following: frame, window sill, A (A1/A2)-pillar, B-pillar, or roof side rail.
- (37) Other right side object (specify): _____

- (38) Right side window sill

INTERIOR

- (40) Seat, back support
- (41) Belt restraint webbing/buckle
- (42) Belt restraint B-pillar or door frame attachment point
- (43) Other restraint system component (specify): _____
- (44) Head restraint system
- (45) Air bag (use codes "16" and "17" for injuries sustained from air bag compartment covers)
- (46) Other occupants (specify): _____
- (47) Interior loose objects
- (48) Child safety seat (specify): _____
- (49) Other interior object (specify): _____

ROOF

- (50) Front header
- (51) Rear header
- (52) Roof left side rail
- (53) Roof right side rail
- (54) Roof or convertible top

FLOOR

- (56) Floor (including toe pan)
- (57) Floor or console mounted transmission lever, including console
- (58) Parking brake handle
- (59) Foot controls including parking brake

REAR

- (60) Backlight (rear window)

- (61) Backlight storage rack, door, etc.
- (62) Other rear object (specify): _____

EXTERIOR of OCCUPANT'S VEHICLE

- (65) Hood
- (66) Outside hardware (e.g., outside mirror, antenna)
- (67) Other exterior surface or tires (specify): _____
- (68) Unknown exterior objects

EXTERIOR of OTHER MOTOR VEHICLE

- (70) Front bumper
- (71) Hood edge
- (72) Other front of vehicle (specify): _____

- (73) Hood
- (74) Hood ornament
- (75) Windshield, roof rail, A-pillar
- (76) Side surface
- (77) Side mirrors
- (78) Other side protrusions (specify): _____

- (79) Rear surface
- (80) Undercarriage
- (81) Tires and wheels
- (82) Other exterior of other motor vehicle (specify): _____

- (83) Unknown exterior of other motor vehicle

OTHER VEHICLE or OBJECT in the ENVIRONMENT

- (84) Ground
- (85) Other vehicle or object (specify): _____
- (86) Unknown vehicle or object

NONCONTACT INJURY

- (90) Fire in vehicle
- (91) Flying glass
- (92) Other noncontact injury source (specify): _____
- (93) Air bag exhaust gases
- (97) Injured, unknown source

INJURY SOURCE CONFIDENCE LEVEL

- (1) Certain
- (2) Probable
- (3) Possible
- (9) Unknown

DIRECT/INDIRECT INJURY

- (1) Direct contact injury
- (2) Indirect contact injury
- (3) Noncontact injury
- (7) Injured, unknown source

OCCUPANT INJURY CLASSIFICATION

Body Region

- (1) Head
- (2) Face
- (3) Neck
- (4) Thorax
- (5) Abdomen
- (6) Spine
- (7) Upper Extremity
- (8) Lower Extremity
- (9) Unspecified

Type of Anatomic Structure

- (1) Whole Area
- (2) Vessels
- (3) Nerves
- (4) Organs (includes muscles/ligaments)
- (5) Skeletal (includes joints)
- (6) Head - LOC
- (9) Skin

Specific Anatomic Structure

Whole Area

- (02) Skin - Abrasion
- (04) Skin - Contusion
- (06) Skin - Laceration
- (08) Skin - Avulsion
- (10) Amputation
- (20) Burn
- (30) Crush
- (40) Degloving
- (50) Injury - NFS
- (90) Trauma, other than mechanical

Head - LOC

- (02) Length of LOC
- (04, 06, 08) Level of Consciousness
- (10) Concussion

Spine

- (02) Cervical
- (04) Thoracic
- (06) Lumbar

Vessels, Nerves, Organs, Bones,

Joints are assigned consecutive two digit numbers beginning with 02

Level of Injury

Specific injuries are assigned consecutive two-digit numbers beginning with 02.

To the extent possible, within the organizational framework of the AIS, 00 is assigned to an injury NFS as to severity or where only one injury is given in the dictionary for that anatomic structure. 99 is assigned to any injury NFS as to lesion or severity.

Abbreviated Injury Scale

- (1) Minor injury
- (2) Moderate injury
- (3) Serious injury
- (4) Severe injury
- (5) Critical injury
- (6) Maximum (untreatable)
- (7) Injured, unknown severity

Aspect

- (1) Right
- (2) Left
- (3) Bilateral
- (4) Central
- (5) Anterior
- (6) Posterior
- (7) Superior
- (8) Inferior
- (9) Unknown
- (0) Whole region